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ABSTRACT

This paper focuses on the design of effective lesson plans using the Internet. Effective lesson design helps students to explore ideas, acquire and synthesize information, and frame and solve problems. The creative problem solving which depends upon context, interrelationships, and real-world activities is available through Internet projects. Communication among schools, home, and community will increase with collaborative projects. The paper explores a multi-level, interdisciplinary problem solving scope and sequence for integrating technology into the curriculum. This framework depends on a multi-tiered conceptual framework. The framework helps teachers visualize how the World Wide Web can be incorporated into a class where students are at various levels of ability in using computers. The structure can be summarized in five steps: (1) learn to search; (2) create a hotlist; (3) create a guided tour; (4) create an HTML file; and (5) post your Web Page. Conceptual frameworks are also presented for guided tours, scavenger hunts, Internet discoveries, CyberInquiries, and WebQuests. An annotated list of Web sites for lesson plans and additional resources is included. (Author/AEF)

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Connecting Learning & Technology

for

Effective Lesson Plan Design

ASCD Conference, March 6, 1999

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ABSTRACT

Connecting Learning and Technology for Effective Lesson Plan Design

This article focuses on the design of effective lesson plans using the Internet. Effective lesson design helps students to explore ideas, acquire and synthesize information, and frame and solve problems. The creative problem solving which depends upon context, interrelationships, and real-world activities is available through Internet projects. Communication among schools, home, and community will increase with collaborative projects.

We will explore a multi-level, integrated and interdisciplinary, problem solving scope and sequence for integrating technology into the curriculum. This framework depends upon a multi-tiered conceptual framework. The framework helps a teacher visualize how the World Wide Web can be incorporated into a class where students are at various levels of ability in using computers.

Further, conceptual frameworks are developed for Guided Tours, Scavenger Hunts, Internet Discoveries, CyberInquiries, and WebQuests.

Connecting Learning & Technology for Effective Lesson Plan Design

The great debate continues about whether technology should be integrated into the curriculum. Invariably the discussion centers on whether the computer will replace the teacher. Or, whether the computer is separate from the curriculum and instruction that is taking place in the classroom. Effective integration of technology requires talented, dedicated committed teachers who facilitate broadening the curriculum from textbook-centered material to real-world applications--simulations, demonstrations, information, communication, and community learning. Questions are raised. Will computers replace the teacher? Will they distract the student? Will basic skills be secondary to student fun and entertainment?

Why should educational technology be integrated in the classroom? Computers help us communicate with others, celebrate successes, inform the public, publish student work, work collaboratively with others on classroom projects, and use a variety of sources to formulate ideas. In the Information Age, educators must innovate constantly. Our world values flexibility, innovation, self-direction and collaborative problem solving. Increasingly, interdisciplinary learning teams are emphasized, particularly at the middle school level. The SCANS report calls for "workers who work on teams, teach others, serve customers, lead, negotiate and work well with people from diverse backgrounds." The workplace of the future requires the ability to "acquire, organize, interpret, and evaluate information and use computers to process it." Among the things that access to technology can do:

✓ Make students more active learners;

- ✓ Help students work at their own pace;
- ✓ Encourage creative, original expression;
- ✓ Improve higher order thinking skills;
- ✓ Empower students to take responsibility for learning through peer tutoring and collaborative work groups;
- ✓ Expose students to authentic, real-world examples and situations;
- ✓ Give students an equal opportunity to access the wide-range of information available on the World Wide Web;
- ✓ Guide the development of discerning and knowledgeable evaluators of information.

"Authentic, real-world applications," has become a governing principle for classroom teachers across the United States. With the passage of the School-to-Work legislation and the emphasis on the education reform movement, changes in curriculum and in the way instruction is delivered have occurred. The explosion of information rattles complacency. Classrooms are inquiry-based centers of exploring learning. With that shift, teachers are facilitators, coaches, managers, and mentors

Student learning has become defined not only as "What a student KNOWS," but also as "What a student is ABLE TO DO." Teachers have long recognized that textbooks do an excellent job of presenting information in abbreviated formats. However, emphasis on process as well as content limits the value of the textbook centered course.

So where does all this change in curriculum and instruction leave us? We know that isolated facts do not make an education. We know that a child must first learn to read. When technology is used with a child who has learned basic skills, learning can explode. Creative problem solving depends upon context, interrelationships, and experience. Teachers guide students

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to make the connections between things. Technology is not the focus; instruction is the focus.

So, how can the use of the computer and Internet help a teacher become a more effective facilitator of learning? The structure can be summarized in five steps.

Step 1: Learn to Search

Learning to search provides teachers access to the vast amount of information available on the Internet. To begin your search:

Select a search engine: If you are teaching young students to search, try a filtered search engine such as yahooligans or searchopolis.

Practice the search for information: You may try to find a variety of information. A practice worksheet may be enjoyable for children. :

1. Where was Millard Fillmore born?
2. Print or show me a recipe for chocolate chip cookies.
3. Locate a picture of Monticello. Print or show me.
4. Where is 06712?

Before introducing Internet projects to students, the teacher must introduce search engines. To familiarize students with search engines, the teacher may give each student a sample form and ask them to narrow their search by adding terms. Common techniques that students should be familiar with are:

- ✓ **plus (+)**: placed before the key word, it includes terms in your search topic
- ✓ **minus (-)**: placed before the keyword, it excludes terms (Inventors -automobiles)
- ✓ **Asterisk (*)**: placed after word, it acts like a wildcard (Invent*)

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- ✓ **quotation marks** (""): placed around a phrase, the search will match results in that exact sequence ("characteristics of inventors"):
- ✓ **(t:)** placed before the keyword, it restricts search to document titles (t: Thomas Edison)
- ✓ **u:** placed before the keyword, it restricts search to document URLs only (u: AltaVista)
- ✓ **Image:** requests picture images having a specific filename. Use image:thomas edison to find pages with images called Thomas Edison.

Students may use a form to search/explore the various search engines, directories, or multi-search engines and to find out the special characteristics of each.

	Inventors	Orville Wright - Wilbur	+t: Thomas Edison	Image: +Thomas+Edison
Yahoo http://www.yahoo.com/				
Magellan http://www.mckinley.com/				
Hot Bot http://www.hotbot.com/				
Yahooligans http://www.yahooligans.com/				
Searchopolis http://www.searchopolis.com				

	Astronauts	John Glenn - Aging	+t:John Glenn	Image: +John+Glenn
Yahoo http://www.yahoo.com	http://www.transport.com/~marvhett/astro.htm 1 Level	http://www.pbs.org/kcet/johnglenn/index2.htm 2 Levels	http://www.discovery.com/stories/science/glenn/glenn.html 1 Level	ftp://ftp.traveller.com/pub/Spaceimages/NASA/MA6/10073613.jpg 2 Levels
Magellan http://www.mckinley.com/	http://www.ksc.nasa.gov/history/history.html 1 Level	http://www.rtd1.com/glenn/index.html 1 Level	http://www.senate.gov/~glenn/discovery.html 1 Level	http://shuttle.nasa.gov/future/sts95/glenn.html 1 Level
Hot Bot http://www.hotbot.com/	http://www.jsc.nasa.gov/Bios/astrobio.html 1 Level	http://www.rtd1.com/glenn/index.html 1 Level	Does not allow Title Searches	http://www.cincypost.com/glenn/ 1 Level
Yahooligans http://www.yahooligans.com/	http://liftoff.msfc.nasa.gov/academy/academy.html 1 Level	Does not allow advanced search	Does not allow Title Searches	http://www.nss.org/askastro/Glenn/multimedia.html 1 Level

STEP 2: Create a hotlist

A hotlist is a collection of Internet sites on one topic. Collecting hotlists is a necessary step before creating a guided tour, a CyberInquiry or a WebQuest.

The student or the teacher may create a hotlist. To be useful, hotlists should include a brief statement about what is at the particular address. Following is a sample hotlist on earthquakes:

http://www.ScholasticNetwork.com/sconline/index.htm

Talk with Ines Cifuentes, our online earthquake expert, and find out what makes the ground shake and quake.

http://www.nationalgeographic.com/world/9610/kwave/how.html - This is a National Geographic site for kids on how a tsunami is formed

http://www.nationalgeographic.com/ - has map maker and lists 42 earthquake sources.

http://www.thetech.org/exhibits_events/online/quakes/

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Earthquake Shake - find out what a seismograph is, as well as other earthquake facts, from The Tech Museum of Innovation

http://disasterium.com/Almanac of Disasters - day-by-day listings of earthquakes, fires, and transportation disasters from throughout the world

http://quake.wr.usgs.gov/

Earthquake Information - latest quake information, how to prepare for a quake, and some earthquake history from the U.S. Geological Survey

http://www.germantown.k12.il.us/html/earthquakes.htmlEarthquakes - facts, definitions, and links on the causes and effects of earthquakes (This is a 7th grade project from a middle school)

http://www.pbs.org/wnet/savageearth/earthquakes/index.htmlSavage Earth: All Stressed Out - this companion site to the PBS program has animations and explanations of why and how earthquakes happen

http://www.crustal.ucsb.edu/ics/understanding/Understanding Earthquakes - take an earthquake quiz, see earthquakes of the past 5 years diagrammed on a globe, learn about the history of seismology and more at this informative site

http://www.enviroweb.org/carnegie/earthquake_right.htmlAnswers to Frequently Asked Earthquake Questions - basic questions are answered with the help of terrific graphics and explanations

http://sln.fi.edu/earth/earth.htmlEarthforces - if you have ever felt the rumble of an earthquake or seen the eruption of a volcano, you've witnessed EARTHFORCE

http://www.gps.caltech.edu/~polet/recofd.htmlEarthquake Record of the Day - data from recent earthquakes, updated every day

http://quake.wr.usgs.gov/QUAKES/WEEKREPS/weekly.htmlU.S.G.S. Weekly Seismicity Reports - maps and information about earthquakes around the world from the United States Geological Survey

STEP 3: Create a Guided Tour

Guided tours are excellent for a beginning Internet user.

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If you are introducing students to the Internet for the first time, a guided tour is an excellent way to familiarize students with the navigation skills necessary to use the Internet.

Using your hotlist, explore the Internet. What questions might your students need to know about the topic? What navigation skills do you need to include in your guided tour (**back**, **print**, **click**).

- ✓ Create a web page with the links for students to follow.
- ✓ Hand out the guided tour and have each student type in the URL's.
- ✓ Develop a guided tour centered upon an instructional theme.
- ✓ Create a folder that contains all of the links under a single folder topic

Step 4: Create an HTML File

Netscape: If you have Netscape4+ just go into the compose section. Type in or cut and paste you text (you may create your guided tour in your word processor and then copy and paste).

Netscape works like a wysiwyg (What you see is what you get) word processor. It composes the HTML code behind the scenes. It isn't the best code, but it is simple to do. Highlight text and/or titles and click on the buttons to increase fonts, change colors, and format.

Highlight text (the name of the link or the URL) and use the simple clicks on the link buttons to enter the URL link (be accurate)

Use right mouse clicks to set background colors, etc. or avoid the buttons and do all of the above operations from the drop down menus.

Word: Word will convert your documents into HTML files for you. However, please remember that the HTML conversion will not support

sophisticated formatting such as tabs and columns. Use tables to align objects.

STEP 5: Post Your Web Page

1) Save your web page to your hard drive or to a floppy. When you wish the students to look at the web page have them up your browser. (Remember your hypertext links will not work unless your have an Internet connection).
2) Contact your Webmaster or systems administrator to arrange to have your web page posted to the Internet.
3) Use a free page service:
   a) Free web space may be available through your commercial provider as part of your service fee. Check with AOL or other provider.

There are sites that allow you to post your web site free:

Free Yellow (http://www.afreewebsite.com/)

Xoom (http://xoom.com/home/)

Tripod (www.tripod.com/).

Geocities (http://www.geocities.com/)

Web 66 (http://web66.coled.umn.edu/)

SchoolNotes.com (http://www.SchoolNotes.com)

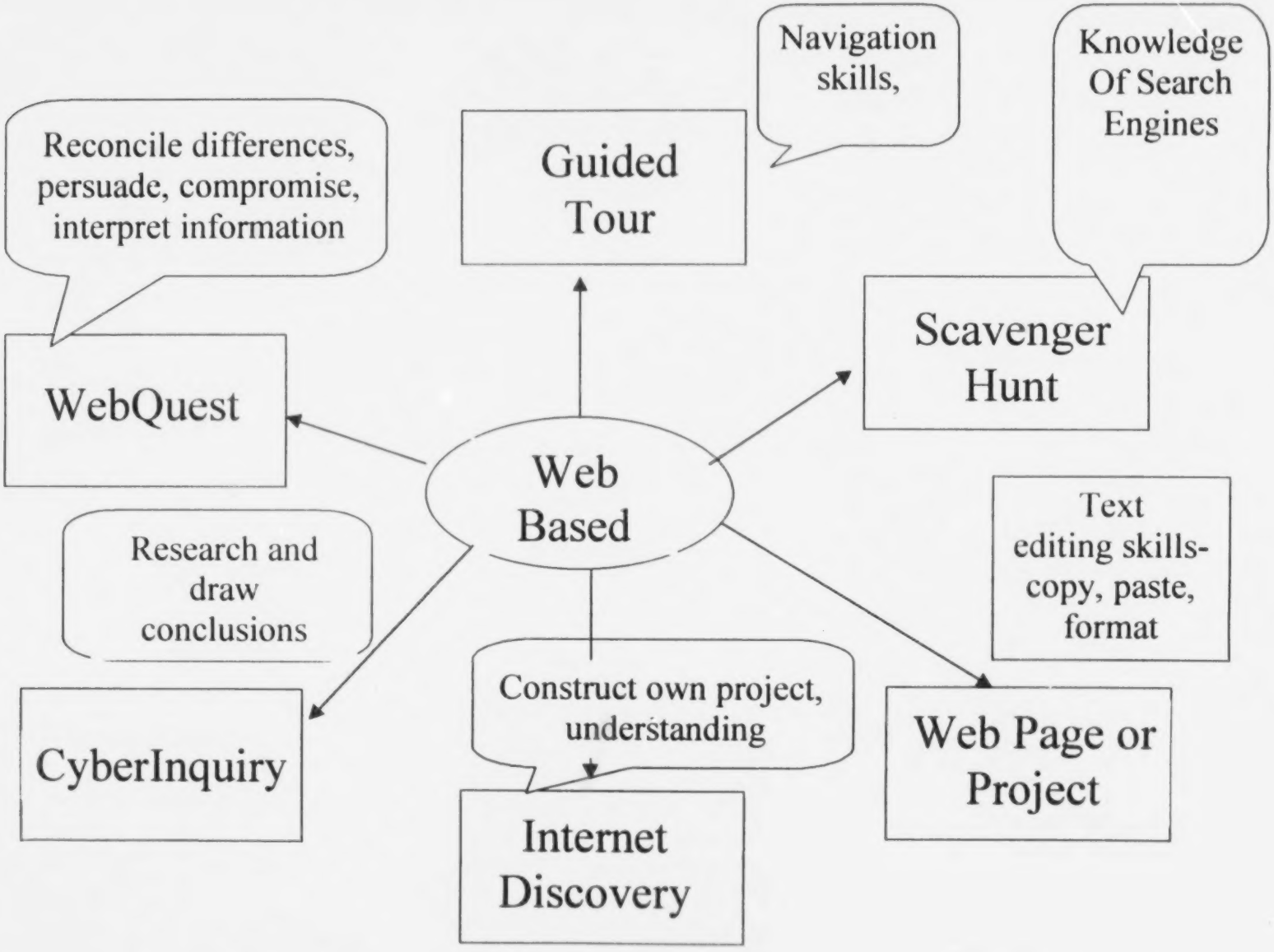
Homeroom.net (http://www.homeroom.net

SNET Free School Web Hosting
(http://www.snetweb.com/school/index.shtml)

A teacher may be mystified by how these five steps can be structured in the classroom. We will explore a multi-level, integrated and interdisciplinary, problem solving scope and sequence for integrating

technology into the curriculum. This framework depends upon a multi-tiered conceptual framework. The nice part about the framework is that it may help a teacher visualize how the World Wide Web can be incorporated into a class where students are at various levels of ability in using computers.

The structure looks like this:


Navigation skills,
Knowledge Of Search Engines
Reconcile differences, persuade, compromise, interpret information
Guided Tour
Scavenger Hunt
WebQuest
Web Based
Text editing skills- copy, paste, format
Research and draw conclusions
Construct own project, understanding
CyberInquiry
Web Page or Project
Internet Discovery

From the diagram, it is evident that we can establish a sequential skills diagram that would permit students to learn the skills necessary to use computers and to foster independent development of curriculum content using the computer. Through guided tours or scavenger hunts, the teacher introduces the information available on the World Wide Web to students. A teacher may create a web page or a Microsoft Word document with active links that encourages exploration of the Web. With younger children, the teacher selects the sites and screens the material. With older students, the teacher may hand the student the links to explore and/or teaches the student to search for sites, evaluate the information and respond to the questions.

A guided tour on **Inventions** explores an upper elementary or middle school student's comprehension of basic facts, encourages the student to apply that knowledge, and extends the learning through writing a biography of an inventor.

Guided Tour--Inventions

Would you like to read about some famous inventions? Would you like to make your own Invention? Follow the links to the sites listed below.

1. Visit Henry Ford Museum & Greenfield Village Online Histories

http://www.hfmgv.org/fyi/main.html

   a) Under the Stories of Inventors heading, click on Thomas Edison and read about his inventions.

   b) Click on the Wright Brothers and read about their inventions

   c) Click on Henry Ford and read about his inventions

2) Visit Ben Franklin's: Glimpses of the Man

   http://sln.fi.edu/franklin/rotten.html. Read information at the "inventor" link.

3) Visit The Mining Company's Kid Inventions page

   http://inventors.miningco.com

   Select Young Inventors near the bottom of the page.

4) Visit the 3-M Collaborative Invention Unit Page

   http://mustang.coled.umn.edu/inventing/inventing.html

   a) What are the four character roles you play to be an inventor?

Would you like to check up on how much you learned at these web sites?

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Inventions Worksheet

1) What did each of these people invent (Look at Henry Ford Museum http://www.hfmgv.org/histories/projects.html):

   a) Henry Ford

   b) The Wright Brothers

   c) Thomas Edison

   d) Were they inventors when they were children?

   e) Describe what each of these inventors did they might have been unusual as children.

2) At the Young Inventors page http://inventors.miningco.com, answer these questions.

   a) What invention is the most useful? Why?

   b) Which invention looks like the hardest to use?

   c) Which invention looks like the most fun to use?

3) To find out the steps that you need to take to make your own invention look at the 3-M page again

   http://mustang.coled.umn.edu/inventing/inventing.html

   a) Tell me the four character roles you play to be an inventor?

4) Look around your home or your school. What ideas do you have for inventions that would make your life easier?

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a) Choose one of your ideas to invent.

b) What materials would you need?

c) Draw some sketches of your invention. Show them to your parents or to your teacher.

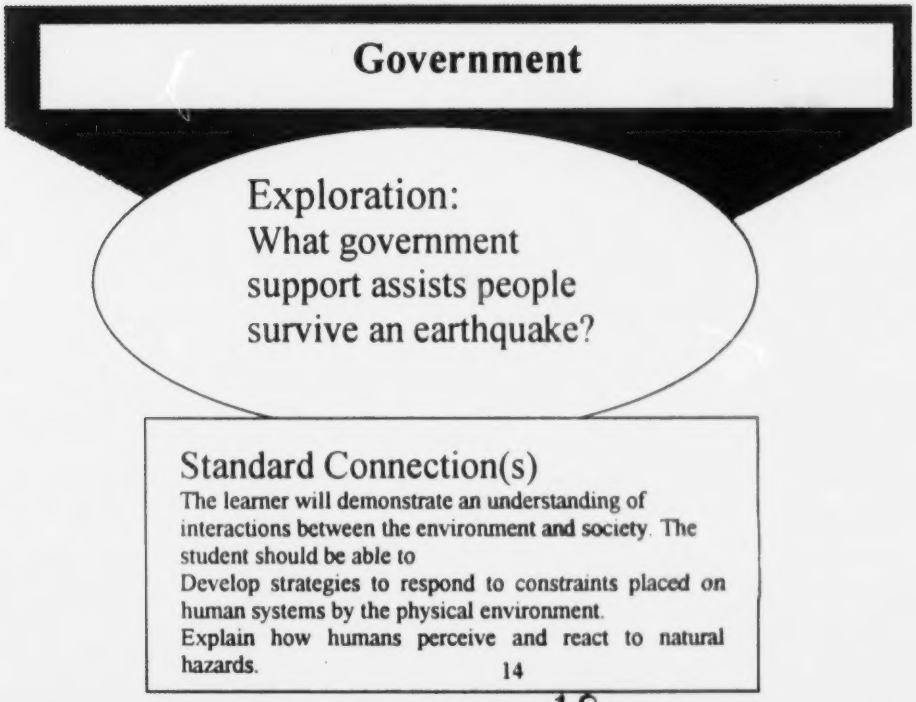
Extension:

Complete the interview and biography at the 3M site. Select someone to interview. Your person might be someone you know. Hand this biography in to your teacher. We will post biographies on the Web so do your best.

The basic conceptual diagram of the guided tour can be outlined using the overall topic of government as follows:

Guided Tour

Topic: Earthquake
Essential Question: How does someone cope with survival


Government
Exploration:
What government support assists people survive an earthquake?
Standard Connection(s)
The learner will demonstrate an understanding of interactions between the environment and society. The student should be able to
Develop strategies to respond to constraints placed on human systems by the physical environment.
Explain how humans perceive and react to natural hazards.
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Earthquakes

Selected Web Sites:

Federal Emergency Management Agency (FEMA) Fact sheet: Earthquakes
http://www.fema.gov/library/quakef.htm
http://www.fema.gov/library/quake.htm
http://www.fema.gov/library/public.htm
USGA National Earthquake Information Center
http://wwwneic.cr.usgs.gov/
Earthquakes, Gases & Earthquake Predictions
http://www.people.cornell.edu/pages/tg21/Earthq.html
USBR Earthquake Information
http://www.seismo.usbr.gov/seismo/eqinfo.html
Chapparal Seismic Web Page
http://cms.wvusd.k12.ca.us/homepage.htm
Studying Earthquakes http://quake.usgs.gov/study/
Predicting Earthquakes http://pubs.usgs.gov/gip/earthq1/predict.html
List of Recent Earthquakes for California, Nevada
http://www.scecdc.scec.org/recenteqs/Quakes/quakes.big.html

Question(s)

What causes earthquakes?
What region has more earthquakes?
How can we prepare for an earthquake?

Assessment

Rubric
Worksheet

A scavenger hunt, using the same topic, may be constructed very easily. A scavenger hunt would be for students who are knowledgeable about the Web, are experienced with using search engines, and are mature enough to remain focused on the instructional unit. Developing a scavenger hunt is one method a teacher can use to teach academic concepts and teach navigation skills to students. Scavenger hunts can be of two primary types.

1. The teacher develops a series of questions or request a series of items for the student to collect and the student uses a search engine to locate the information.
2. The teacher develops a series of questions and gives the student a hypertext link to the URL that will answer the question..

In either case, developing a scavenger hunt is no different from developing a general knowledge quiz for students. A teacher may take the following steps:

- Identify an idea/concept that he/she would like to reinforce or introduce.
- Search for web sites that reinforce/introduce the concept.
- Develop questions that may be answered at the site.
- Save it to a web site or give students a paper handout.

A standard template may be used. In the example below, the form is designed so that the student must first come up with keywords that will be used when searching for information. This is done before the student begins to search. The child must think about what it is he/she is trying to accomplish. In schools where the Internet connection is located in the media center, this permits the media specialist to know that the student is using the Web for a class assignment. Additionally, the teacher has the student keep track of the sites visited and what was found at the site.

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Scavenger Hunt--Inventions

What are the characteristics that an Inventor must possess to be successful? What did Thomas Edison, The Wright Brothers, Henry Ford, and Ben Franklin invent? Were they inventors when they were children? After you have completed your search, use the discovery form to present the material to the class.

Search Engine_____

Keyword(s) or Phrases used to conduct search:

1._____

2._____

3._____

4._____

5._____

Teacher's approval_____ _____

1. Address & brief description of site visited:

URL: http://_____

Description

2. Address & description of site visited:

URL: http://_____

Description

3. Address & description of URL visited:

URL: http://_____

Description

What else did you find that you might wish to pursue at another time?

Discovery

The purpose of this form is to focus your Internet surfing. After you have completed your scavenger hunt, decide on a topic that you would like to pursue more fully that is related to the questions that you researched in the scavenger hunt. Before beginning the project, you must have your teacher's approval.

Name_____

Date_____

Title of the Internet Discovery_____

Interesting topics that I discovered and would like to explore further

What is the purpose of the project? What do I find interesting that I would like to present to my classmates?

Teacher Approval (Teacher must initial before project can be undertaken)_____

Interesting questions that should be added to the discovery:

1._____

2._____

3._____

I plan to use the following additional resources:

1._____

2._____

3._____

4._____

5._____

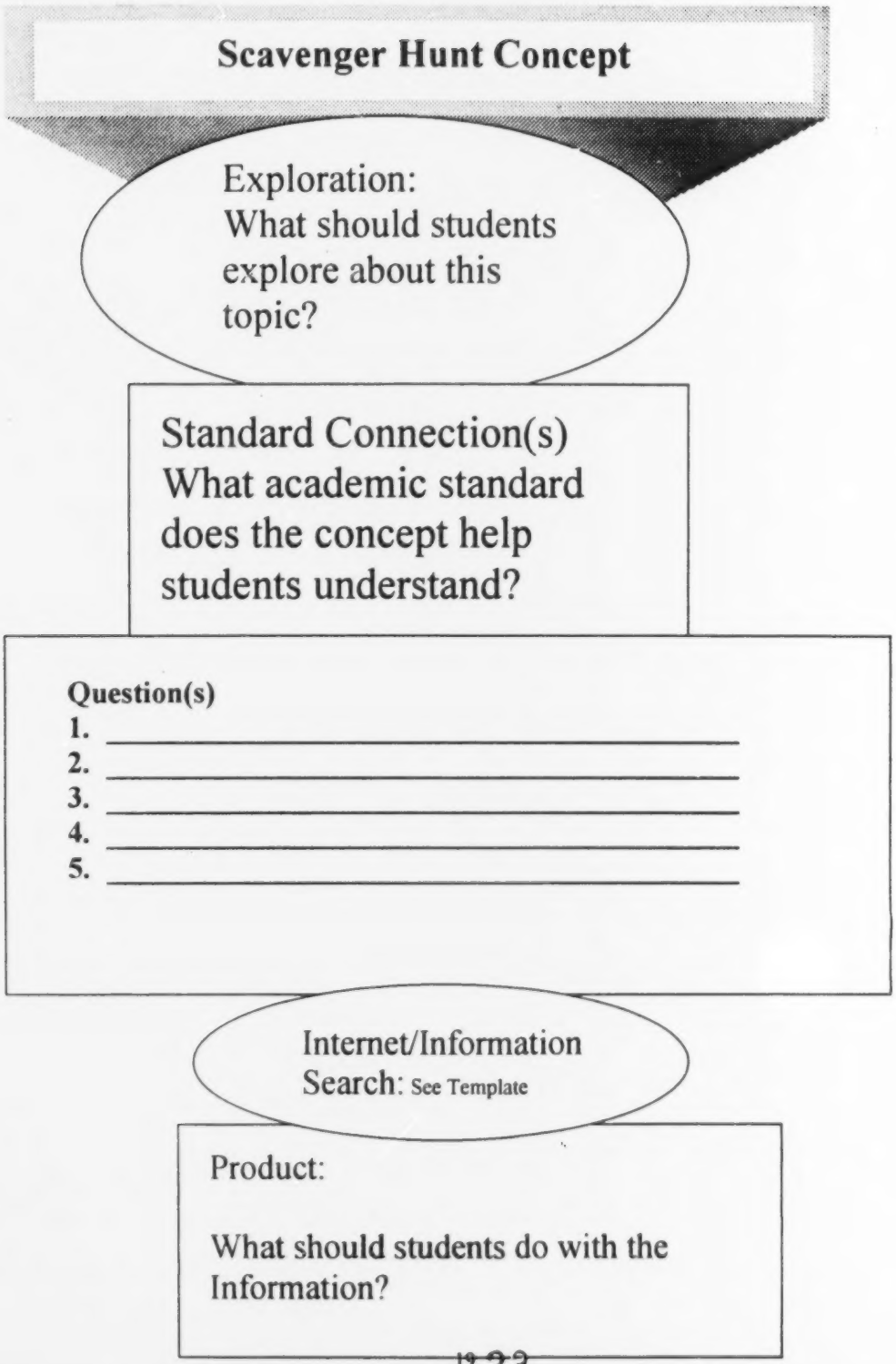
I will present the information in the following manner:

1._____

2._____

The conceptual framework for a scavenger hunt is very similar to the framework for the guided tour:

Topic
Essential Question:



Topic: Earthquake
Essential Question: How does someone cope with survival

Government

Exploration:
What government support assists people survive an earthquake?

Standard Connection(s)
The learner will demonstrate an understanding of interactions between the environment and society. The student should be able to
Develop strategies to respond to constraints placed on human systems by the physical environment.
Explain how humans perceive and react to natural hazards.

Question(s)

6. **What is the role of government in helping people survive an earthquake?**
7. **What support systems are in place for earthquake survivors**
8. **What regulations should government have in place to protect citizens?**

Internet/Information Search: See Template

Product:
Prepare an informational brochure for distribution to citizens on Earthquake preparedness.

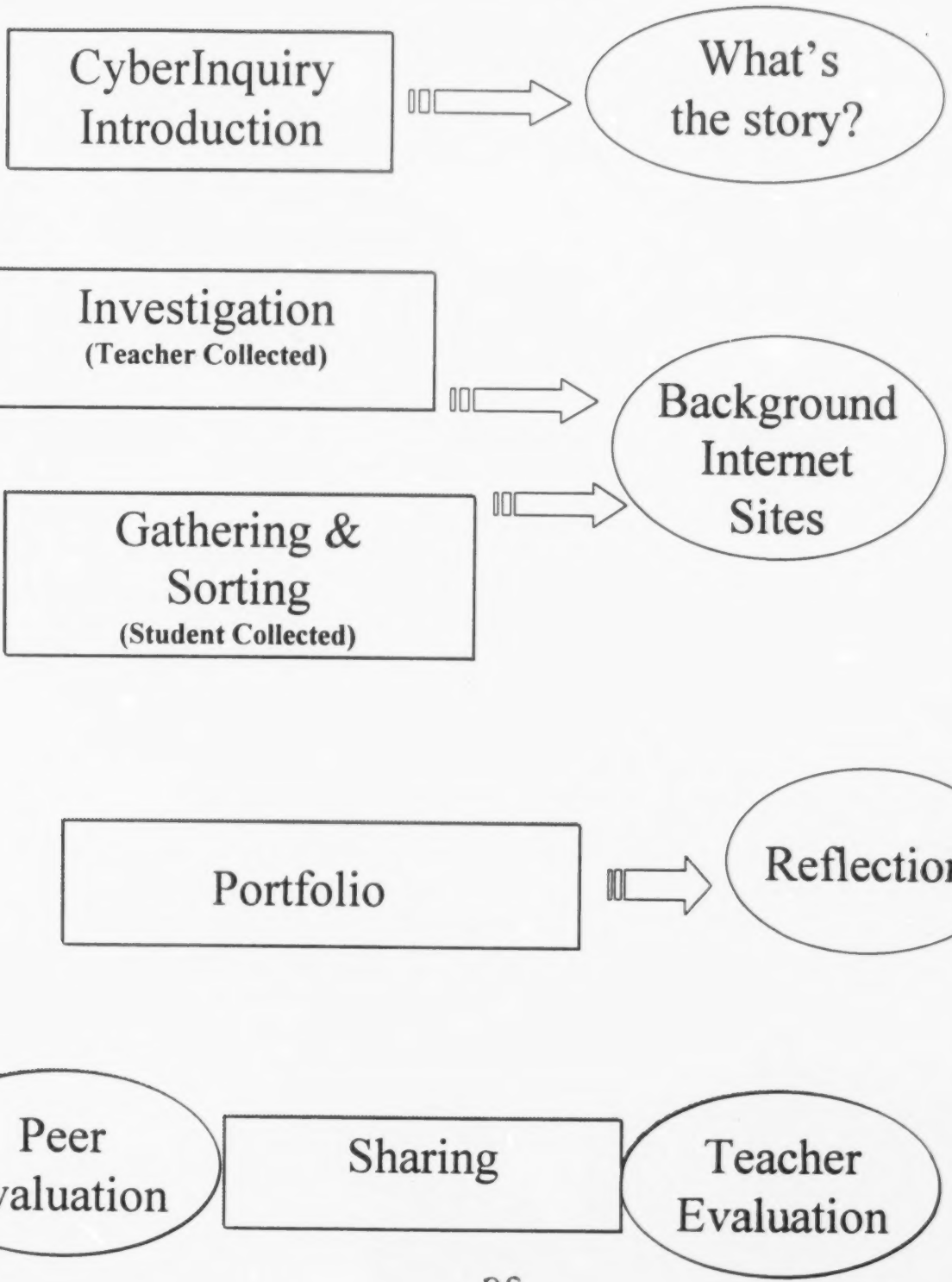
Effective use of technology in the classroom requires the careful planning and attention to detail that teachers show in other areas of their work. It cannot be a drifting or a random search for information. Teachers must guide the inquiry so that the child is focused on the instructional task. Using scavenger hunts and guided tours are ways that teachers can more easily direct computer inquiry.

A CyberInquiry is a transition step between a guided tour and a WebQuest. Like the WebQuest, the CyberInquiry requires that the student analyze, synthesize and evaluate. The student is challenged to think critically to solve a task. In the WebQuest, there are traditionally six steps (Introduction, Quest, Process, Resources, Evaluation and Conclusion). As part of the process, students each take a role, often one that will produce dissonance or opposing points of view. As part of the conclusion, students, playing their respective role, reach a consensus on the topic. Often times, a WebQuest is researched with links that the student must follow in their role.

The CyberInquiry, on the other hand, is shaped similarly--an introduction, investigation, gathering and sorting, portfolio, sharing and evaluation. However, the difference is that in a CyberInquiry the project is more student-centered. The teacher provides background material for the investigation, but the student generates additional research on the topic on the Internet.

The conceptual framework for a CyberInquiry can be diagrammed as follows:

CyberInquiry



Put the Title of the CyberInquiry Here

Developed by (put your name and email link)

Teacher Overview

Describe what the lesson is about.

Specify content area (mathematics, language arts, etc) and grade level (middle, elementary, early childhood, etc.).

Specify strands and objectives from state or national academic standards that this CyberInquiry supports. List by subject area.

List any special resources needed in the classroom or in the media center for the students to complete the activity. For example, print resources in the media center, art reproductions, or video and audio materials.

Introduction|Investigation|Gathering & Sorting|Portfolio|Sharing|Evaluation

Introduction

Write an introduction to your CyberInquiry that will give students some background about the topic. Try to interest them. Begin by exploring essential questions about the topic. The question(s) should encourage student interpretation and should allow for various answers.

Example: If studying a unit on John Glenn's journey into space in the fall of 1998, essential question(s) may be:

Some people believe that the purpose of sending John Glenn into space last fall was to create positive publicity for the space program so that people would support an increase in the NASA budget. They also believed that the action endangered John Glenn needlessly. What evidence can you find that disputes or substantiates these fears? What were the biggest risks in NASA's decision? What limitations or advantages did John Glenn bring to the mission? Despite the potential advances in medicine, should the elderly be allowed/encouraged to participate in space flights?

You are an investigative reporter who must prepare a multimedia presentation on this topic. The report will appear on *60 Minutes*.

Have students redefine the essential question(s) to demonstrate understanding of their task. Ask them to speculate about what they will learn. What do they think will be the outcome?

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Why?

Ask students to brainstorm in their group and to come up with a list of guiding question(s) that will assist them in their search for information and understanding.

The team should break the project into parts so that each team member researches one aspect of the assignment. After investigating background information, the group should reconvene to determine if any changes should be made in assignments.

Introduction|Investigation|Gathering & Sorting|Portfolio|Sharing|Evaluation

Investigation

The first step should orient students to the guiding question(s) they will be investigating. The teacher collects Internet site that will aid the students in getting general background on the topic. Teacher should include brief, concise annotations with the URL's to let students know what kind of website they are going to be examining.

For example:

URL: http://www.nasa.gov:

Description: Visit NASA's homepage to gather information about the effects of space travel on the human body.

URL: http://www.discovery.com/stories/science/glenn/glenn.html

Description: This site offers information on John Glenn's recent Space Shuttle mission. It discusses how the age barrier for astronauts has been broken, as well as the tremendous physical demands that space travel places upon the human body.

For the younger student, the teacher may provide activities sheet to guide and structure the inquiry. More mature students should maintain records and notes that document the search.

After investigating the information, students should reconvene in their group to discuss any necessary revisions in their search strategy.

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Gathering & Sorting

Teacher should select additional sites (not annotated) that cover the topic more thoroughly. Students should search through the sites and see which are most appropriate to the part of the topic that is being researched. Students should be reminded that the information that they are looking for may not be at a particular site.

For more mature or experienced Internet users: Students should search for additional information on the Internet that relates to the part of the topic that they are researching. (Remind students that they are part of a team. If they find information that will help someone else on their team, they should share it.)

NOTE: Students who are experienced with search techniques may be paired with students who are less experienced. One student is the pilot (search) while the other student is the navigator (suggests search possibilities; takes notes, dictates into a tape recorder).

Have students list and annotate URL's that provide information that helps them answer the original question(s) or newly generated questions

Students should collect artifacts or pictures to use in the multimedia presentation.

Ask students to provide essential question(s) that looks at the original question(s) from a historical/cultural perspective or any other fashion that you designate. Students may rephrase the guiding question(s) to suggest a CyberInquiry they might be interested in developing. For instance, How has the perception of the elderly changed over the last century? Has this been good or bad for society? How do other societies treat their elderly?

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The Portfolio

Teachers should create a self-contained portfolio (in a brightly decorated box or bin) that contains supplementary information for students to use in their research (library books, biographies, articles, magazines, models, lesson plans, pictures, recordings, etc.).

The portfolio process provides an opportunity for students to think about their learning experience and to relate the newly acquired knowledge to other information that has been collected. The students contribute their own research to this

Students should be given time to explore the materials contained in the portfolio.

Students should review their own materials that they have collected and determine what is

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the "best" information to add. Students should add one piece of information to this collection.

Students should attach a 5 X 6 index card to their information that details their reason for adding the information to the portfolio. How does the information enrich the portfolio? Why is it important?

Students write an argumentative or persuasive essay/paper addressing the guiding question(s). Each group member writes an essay independently. Teacher should tell student the type of essay, the length, and the grading criteria.

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Sharing

In their groups, students should come to a consensus as to what information should be presented in the multimedia presentation.

Students in their groups should develop a presentation that answers the essential question(s).

The presentations should provide enough background so classmates will gain an understanding of the topic even if they do not possess prior knowledge of it.

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Evaluation

Provide students with a clear understanding of the grading criteria that will be used to evaluate their efforts.

Each member of the class should be a part of the evaluation. Have class members read the essential questions and develop a rubric prior to the presentation (provide examples for them). Or, provide links to online rubrics that students can use to determine the grading criteria. Following are some examples that may be used for a variety of projects.

http://edweb.sdsu.edu/triton/july/rubrics/Rubric_Template.html

http://edweb.sdsu.edu/triton/tidepoolunit/Rubrics/collrubric.html

Class members should share the rubric with the group prior to the presentation.

Group members should complete a CyberInquiry evaluation that elicits comments on the assignment, questions, or concerns they had about the project. What did they like best? How did they approach the search? Why did they divide the topic as they did? How effective was their approach. What would they do differently? What worked well? Why?

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WebQuests are among the most fascinating applications on the Web for K-12 educators. Student-centered and inquiry-based, a WebQuest challenges students to explore the web for information. Most WebQuests include the links that are appropriate for students to research as well as suggestions for further research. WebQuests are generally constructed around a scenario of interest to students. Traditionally WebQuests have an introduction, a process, a task, a list of resources, a conclusion, and an evaluation. WebQuests challenge students to higher levels of thinking. Although difficult to construct, a webquest can be a natural extension of the work from guided tours, to scavenger hunts, to CyberInquiries. As the teacher develops a guided tour, the teacher may begin to think of a more complicated, a more interdisciplinary approach to the subject. Over time, the simple guided tour may become a foundation on to which the WebQuest will be structured. The conceptual framework for a WebQuest underscores it's complex nature:

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Constructing a WebQuest
Begin with the Essential Question

Introduction:
How does someone cope with survival? What are the responsibilities of the individual and the government in dealing with earthquakes? What areas are most prone to earthquakes? Should you live in those areas?

Teacher Activity:
Describe area(s) of academic standards and objectives that will be supported. (WebQuests should be interdisciplinary.)

Task:
A recent earthquake in South America has heightened public concern about earthquake prone areas. Thousands died as a result of the earthquake. A Congressional committee is looking into the question of earthquake safety. They have commissioned a report from your committee in the following areas: What is the public's responsibility for individuals who choose to live in earthquake-prone areas? What should we do to ensure the public safety? Does individual freedom clash with governmental responsibility? Is information available about earthquake predictability. How reliable is it? What can an individual do to increase their survival chances?
Please read over the role descriptions. Select the role that you would like to pursue. Each member of your group must select a different role.

Collected from Cyber Discovery, Guided Tour or Scavenger Hunt

Resources

Internet

Assignment Seismologist	Assignment Homeowner (in an earthquake prone area)	Engineer specializing in earthquake proof construction	Assignment Newspaper Reporter	Assignment Director of FEMA

Contributions:
What about a role that focuses on psychic predictions?

Consensus:
After studying the information and becoming knowledgeable about your role, complete your assignment. Meet with your group to prepare a report for congress, advising them on recommendations. The group should reach agreement upon these recommendations. Be sure you supply factual data to the committee.

Evaluation

Product

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To look for ideas, teachers may check out the web resources on the Spartanburg District 3 site, http://www.spa3.k12.sc.us or explore the following lesson plan sites.

Lesson Plans and other Resources

Alphabet Superhighway http://www.ash.udrel.edu/ash An educational website sponsored by the U.S. Department of Education, The Alphabet Superhighway, assists students in creating, locating, and communicating information through on-line activities. The Alphabet Superhighway is a resource for teachers, students and parents.

Amazing Picture Machine http://www.ncrel.org/ncrtec/picture.htm From the North Central Regional Technology in Education Consortium, Amazing Picture Machine offers a searchable index of Internet graphics for your lessons, including literature and science. The site also includes lesson ideas and search tips.

AT & T Learning Network Resources for Teachers http://www.att.com/edresources/ From AskLN, an online mentoring program for teachers, to Internet 101 and a Web Tour, educators will find this spot useful.

Awesome Library: http://www.neat-schoolhouse.org/ This site provides a list of subject related lesson plans, including arts, science, math, language arts/English and more.

Busy Teachers Web Site K-12: http://www.ceismc.gatech.edu/BusyT/ Developed by

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Georgia Tech, this site lives up to its name. Subject category links ranging from chemistry to art makes searching for education related sites easy. There is also a Teachers Reference section which lists current educational topics and additional links.

Classroom Connect: http://www.classroom.net/ This site is dedicated to the classroom teacher. Included are links to thousands of online schools, a search engine, and lesson plans.

Community Learning Network http://www.cln.org/ If you want to explore a huge range of exemplary educational Internet resources, this site offers over 3,800 annotated links to educational resources on the Web. This site also offers opportunities for teachers to learn the net and much more.

Connections +: http://www.mcrel.org/connect/plus/ In addition to links to lesson plans, activities, and curriculum resources, this site groups the information together with subject area content standards. Standards are from **Content Knowledge: A Compendium of Standards and Benchmarks for K-12 Education.**

The Dolly & Buster K-4 Resources Page http://www.concentric.net/~terrapin/index.html This site, primarily designed for elementary teachers, contains a K-4 teachers page with useful links, and a classroom page that has age-appropriate links.

Edsitement Site: http://edsitement.neh.fed.us Sponsored by NEH, this site offers a hotlist to top humanities sites. It offers online learning guides that include lesson plans that help students, teachers, and parents use the Internet effectively.

Education World: http://www.education-world.com/ Education World has a database of over 20,000 URL's as well as monthly site reviews of education-specific topics, a message board, a listing of K-12 school sites, as well as subject category listings.

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EdWeb Home Page: http://edweb.cnidr.org/ This site includes interactive lessons on using the World Wide Web, information on creating home pages, history and more, more, more. Created by the Corporation of Public Broadcasting, this site has a great group of links to other sites.

Eisenhower National Clearing House: http://www.enc.org Nationally recognized, the Eisenhower National Clearing House is a great place for information on Math & Science. Publications, Resources, hot links, lesson plans and discussion groups are available.

Federal Resources for Educational Excellence: http://www.ed.gov/free/ This site offers o a treasure trove of historical documents, scientific experiments, mathematical challenges, famous paintings, and other tools for teachers & students.

Global Schoolhouse: http://www.gsh.org/ Presented by the SchoolNet Foundation and sponsored by Microsoft, this site offers education resources, activity guides, a registry for classroom projects, and a data base of schools that are on the Internet.

Hazel's Homepage http://www.marshall-es.marshall.k12.tn.us/jobe/ A first and second grade teacher, Hazel has links to children's authors, web integration ideas and classroom projects.

Kathy Schrock's Guide for Educators: http://www.capecod.net/schrockguide/ This guide for educators provides hypertext. The links are separated into subject specific areas.

PacBell's Knowledge Network Blue Web'n: http://www.kn.pacbell.com/wired/bluewebn One of the finest sites for educators on the web, Blue Web'n has a searchable data based of K-12 applications. Almost everything posted is excellent and useable. The site is categorized by subject, grade level and type.

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